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Claims 1 – 20 canceled

21. (Currently amended) A method for in situ remediation of an aquifer having a treatment zone through which passes water contaminated with at least one chemical contaminant which method comprises:

injecting into the aquifer, by at least two conduits, an oxygen-containing gas at a pressure of at least 5 psig above the hydrostatic pressure at injection points; wherein the volume of oxygen-containing gas injected each time at each injection point contains from about 1 to about 100 times of minimum average volume (Vmin) in cubic feet of total oxygen, measured at ambient temperature and ambient pressure, Wherein Vmin can be calculated as:

$$V\ min = 0.1 \times A \times B \times P \div N$$

Wherein
A = treated area (square ft)
B = treatment thickness (ft)
P = porosity
N = number of injection points

22. (Previously presented) The method according to claim 21, wherein the oxygen-containing gas is injected to the aquifer at a frequency of from about once a week to about ten times a day.

23. (Previously presented) The method according to claim 21, wherein the injection oxygen-containing gas at each injection point lasts from about 0.05 to about 4 minutes;

24. (Previously presented) A method according to claim 21, wherein the oxygen-containing gas is injected to the aquifer by a plurality of gas injectors spaced less than 10 ft. apart.

25. (Previously presented) The method according to claim 21, wherein injection frequency and volume at each injection point having the relationship according to the following equation:

$$e^{[(-V \times F \times N \times 30)/(W \times B \times Q)]} > 0.50$$

Wherein:

e = natural exponential

V = volume of gas injected at each injection point (ft3)

F = frequency of injections (number of injections per day)

N = number of gas injection points

W = width of the treatment zone perpendicular to groundwater flow path (ft)

B = vertical thickness of treatment zone (ft)

Q = specific discharge of ground water to the treatment zone (ft/day)

H = Henry's Constant for contaminant of interest ((mg/L-water)/(mg/L-air))

26. (Previously presented) The method as claimed in claim 21, wherein the loss of contaminant(s) from volatilisation is less than 50% by weight.

27. (Currently amended) The method according to claim 21, wherein said contaminant is selected from the group consisting of (a) methyl-t-butyl ether (MTBE), (b) t-butyl alcohol (TBA), and (c) a mixture thereof; wherein at least a portion of the contaminant is degraded to carbon dioxide ~~by said microbial culture~~.

28. (Previously presented) The method according to claim 21, wherein each injection of oxygen-containing gas at each injection point lasts from about 0.5 to about 2 minutes.

29. (Currently amended) A method for in situ remediation of an aquifer having a treatment zone through which passes water contaminated with at least one chemical contaminant, which method comprises injecting into the aquifer, by at least two conduits, an oxygen-containing gas at a pressure of at least 5 psig above the hydrostatic pressure at injection points by pulsed injection at a frequency from about once a week to about ten times a day, wherein each injection of oxygen-containing gas at each injection point lasts from about 0.05 to about 4 minutes;

30. (Previously presented) The method as claimed in claim 29, wherein the loss of contaminant(s) from volatilisation is less than 50% by weight.

31. (Currently amended) The method according to claim 29, wherein said contaminant is selected from the group consisting of (a) methyl-t-butyl ether (MTBE), (b) t-butyl alcohol (TBA), and (c) a mixture thereof; wherein at least a portion of the contaminant is degraded to carbon dioxide ~~by said microbial culture~~.

32. (Previously presented) The method according to claim 29, wherein each injection oxygen-containing gas at each injection point lasts from about 0.3 to about 2 minutes.

33. (Previously presented) The method according to claim 29, wherein injection frequency and volume at each injection point having the relationship according to the following equation:

$$e^{[(-V \times F \times N \times H)/(W \times B \times Q)]} > 0.50$$

Wherein:

e = natural exponential

V = volume of gas injected at each injection point (ft3)

F = frequency of injections (number of injections per day)

N = number of gas injection points

W = width of the treatment zone perpendicular to groundwater flow path (ft)

B = vertical thickness of treatment zone (ft)

Q = specific discharge of ground water to the treatment zone (ft/day)

H = Henry's Constant for contaminant of interest ((mg/L-water)/(mg/L-air))

34. (Previously presented) The method of claim 32, wherein, $e^{[(-V \times F \times N \times H)/(W \times B \times Q)]}$ is greater than 0.80.

35. (Previously presented) The method according to claim 11, wherein said contaminant is na oxygenate chemical, wherein $e^{[(-V \times F \times N \times H)/(W \times B \times Q)]}$ is greater than 0.90 and the contaminant loss from volatilization is less than 10% by weight.

36. (Currently amended) A method for in situ remediation of an aquifer having a treatment zone through which passes water contaminated with at least one chemical contaminant, which method comprises injecting into the aquifer, by at least two conduits, an oxygen-containing gas at a pressure of at least 5 psig above the hydrostatic pressure at injection points with injection frequency and volume at each injection point having the relationship according to the following equation:

$$e^{[(-V \times F \times N \times H)/(W \times B \times Q)]} > 0.50$$

Wherein:

e = natural exponential

V = volume of gas injected at each injection point (ft3)

F = frequency of injections (number of injections per day)

N = number of gas injection points

W = width of the treatment zone perpendicular to groundwater flow path (ft)

B = vertical thickness of treatment zone (ft)

Q = specific discharge of ground water to the treatment zone (ft/day)

H = Henry's Constant for contaminant of interest ((mg/L-water)/(mg/L-air))

37. (Previously presented) The method of claim 35, wherein, $e^{[(-V \times F \times N \times H)/(W \times B \times Q)]}$ is greater than 0.80.

38. (Previously presented) The method according to claim 35, wherein said contaminant is na oxygenate chemical; wherein $e^{[(-V \times F \times N \times H)/(W \times B \times Q)]}$ is greater than 0.90 and the contaminat loss from volatilizaiton is less than 10% by weight.